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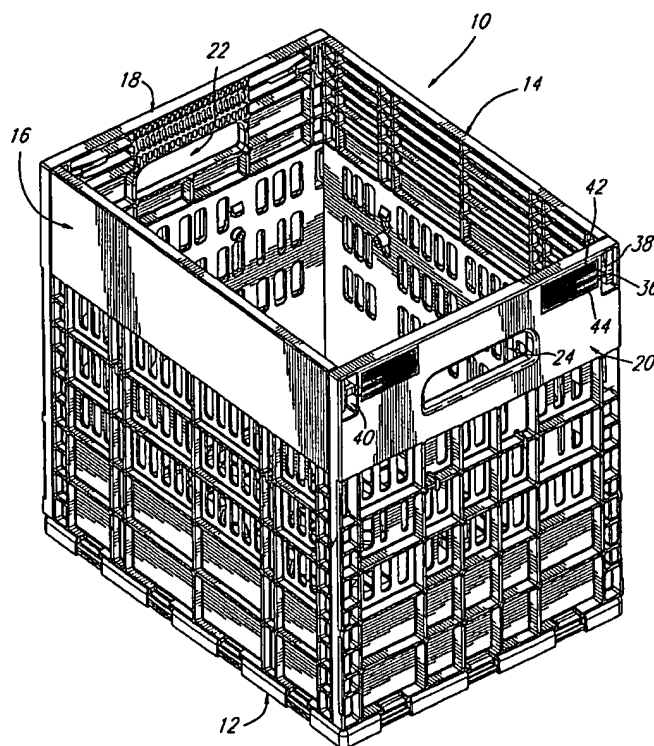
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(54) CONTENANT EN CINQ PARTIES A MECANISME DE
FERMETURE

(54) FIVE-PIECE OPEN CONTAINER WITH LOCKING
ARRANGEMENT



(57) Contenant ouvert en cinq parties. Le contenant est constitué d'une partie inférieure composée de matières plastiques, et de quatre parties latérales également en matières plastiques et montées sur la partie inférieure de manière à pivoter, les quatre parties latérales se déplaçant par rotation entre la position droite et la position non dressée. Le coin supérieur de chaque partie comporte des pièces formant partie intégrante des parties latérales et permettant à celles-ci de se tenir interreliées dans une position droite. L'une des pièces intégrantes assure le maintien en position droite des parties latérales, et cette pièce peut être repliée manuellement vers l'extérieur à partir de l'intérieur du contenant pour permettre de dégager les pièces latérales les unes des autres pour les placer en position non dressée.

(57) A five-piece open container comprises a bottom piece formed of plastics material and four side pieces also formed of plastics material and pivotally mounted to the bottom piece so that the side pieces may be pivotally moved between an erected position and a non-erected position. In the upper corner of each piece are provided parts which are integral with the side pieces and which enable the side pieces to be maintained in an erected inter-engagement. One of the integral parts ensures a securing arrangement when the side pieces are in the erected position, but it may be manually flexed outwardly from inside the container to enable the disengagement of the side pieces from one another so that they may be moved into a non-erected position.

ABSTRACT

A five-piece open container comprises a bottom piece formed of plastics material and four side pieces also formed of plastics material and pivotally mounted to the bottom piece so that the side pieces may be pivotally moved between an erected position and a non-erected position. In the upper corner of each piece are provided parts which are integral with the side pieces and which enable the side pieces to be maintained in an erected inter-engagement. One of the integral parts ensures a securing arrangement when the side pieces are in the erected position, but it may be manually flexed outwardly from inside the container to enable the disengagement of the side pieces from one another so that they may be moved into a non-erected position.

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TITLE OF THE INVENTION

Five-piece open container with locking arrangement.

FIELD OF THE INVENTION

5 The present invention pertains to a five-piece open container formed of a bottom piece and of four side pieces and provided with a locking arrangement that secures the side pieces in their erected position.

BACKGROUND OF THE INVENTION

10 Containers for carrying items, such as bottles, fruits and vegetables and the like are made of injection molded plastics material to replace containers which were previously made from wood or cardboard. These plastic containers can be cleaned and washed so that they may be reused frequently.

15 Recently, plastic containers have been made without the use of any metallic parts so that the connection of the side pieces to the bottom piece is accomplished by integral parts of these pieces, such as hinges and hinge connections, which allow the side pieces to be folded between an erected position, an inwardly folded position and/or an outwardly folded position. One such construction can be found described in applicant's patent No. 5,515,987 issued May 14, 1996. Similar containers may also be
20 found described in applicant's U.S. patent application 08/696,242, filed August 13, 1996 and issued on December 23, 1997 under patent No. 5,699,926.

25 The above containers described in these patent and patent applications include, in the opposite lateral edges of their side pieces, complementary engaging means allowing the side pieces to be maintained in an erected position.

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It has been found that these types of side engagement are not reliable and the side pieces often disengage when they are subject to harsh manipulation, especially when the containers are fully loaded.

OBJECTS AND STATEMENT OF THE INVENTION

5 It is an object of the present invention to provide a securing arrangement between the side pieces of a five-piece container to enhance the inter-engagement of the side pieces.

10 This is achieved by providing, in addition to the inter-engaging parts, as an integral part of two of the side pieces, a flexible finger actuatable part which, with the side pieces in their erected position, ensures a secured assembly of the side pieces together. On the other hand, this actuatable part can easily be moved out of this securing position allowing inward or outward pivotal movement of the side pieces, either folded over the bottom piece or lying completely outwardly for transport.

15 The present invention therefore relates to a five-piece open container for carrying items comprising: a rectangular bottom piece formed of plastics material, the bottom piece having opposite edges; and four side pieces formed of plastics material, each side piece having a lower edge hingedly connected to a corresponding edge of the bottom piece whereby
20 the four side pieces may be pivotally moved between two positions including an erected position and a non-erected position. Each side piece has, in the upper part thereof and adjacent a lateral edge thereof, cooperating means for inter-engaging the side pieces in the erected position, and finger actuatable means integral with two of the side pieces securing the side
25 pieces in an erected inter-engagement. The finger actuatable means are

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flexible outwardly so as to be moved out of a securing position and to enable
disengagement of the side pieces from one another.

Other objects and further scope of applicability of the present
invention will become apparent from the detailed description given
5 hereinafter. It should be understood, however, that this detailed description,
while indicating preferred embodiments of the invention, is given by way of
illustration only, since various changes and modifications within the spirit and
scope of the invention will become apparent to those skilled in the art.

BRIEF DESCRIPTION OF THE DRAWINGS

10 Figure 1 is a perspective top view of a five-piece open
container embodying the present invention;

Figure 2 is an enlarged fragmentary perspective view showing
one corner of the container of figure 1; and

15 Figures 3a, 3b and 3c show the successive operations to be
performed in order to secure two side pieces together.

DESCRIPTION OF PREFERRED EMBODIMENTS

Referring to figure 1, there is shown a five-piece open
container, generally denoted 10, made entirely and solely of rigid plastics
material. The container which may be used to carry bottles for example,
20 essentially consists of a bottom piece 12, opposite side pieces 14 and 16
and opposite end pieces 18 and 20. Openings 22 and 24 are provided in the
respective end pieces 18 and 20 to facilitate the manual handling of the
container. The structural appearance of the five pieces of the container is
conventional, consisting of reinforcing ribs and a plurality of openings to
25 provide rigidity and lightness (and aeration in some cases).

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The side and end pieces are hingedly connected to the bottom piece along their lower edge thereof. A detailed construction of the connection of the lower edges of the side and end pieces to the side and end edges of the bottom piece will not be described as it does not form part of the present invention; however, reference may be made to applicant's earlier U.S. patent application 08/696,242 filed August 13, 1996. The advantage of such construction is that no metallic parts are used in the connections of the side and end pieces to the bottom piece.

The present invention is particularly concerned with the connection of the side and end pieces to one another in their erected position. At each upper corner of the container, there are provided inter-engaging means cooperating to lockingly assemble the side and end pieces in the erected position as well as finger actuatable means to secure the side and end pieces in this inter-engagement. As can be seen in figure 1, these means are provided at each corner; however, referring to figure 2, they will be described in detail in connection with only one corner i.e. between side piece 14 and end piece 18. It is to be noted, however, that identical means are provided in the other three corners of the container.

Hence, referring to figure 2, the inter-engaging means first consist of an outwardly projecting part 30 that extends from the lateral edge 32 of the side piece 14. This projecting part 30 has a rectangular configuration with a rectangular opening 34.

The end piece 18 displays an elongated integral part 36 which, as can be seen in figure 1, has one end continuous with the side wall of the end piece and an opposite free end 38 which extends into a rectangular cavity 40 in the upper corner of the end piece. The elongated member 36 is formed as a result of the two horizontal slits 42 and 44 in the wall of the end

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formed as a result of the two horizontal slits 42 and 44 in the wall of the end piece so that it may be flexed outwardly relative to this side wall of the end piece. The inner side of this elongated member 36 has a finger contacting portion 46 which, by reason of the recessed portions 48 and 50 of the internal rib configuration of the end piece, can be manually moved a certain distance towards the outer wall of the end piece. In so doing, the extremity 38 of the member 36, which faces the projecting part 30 of the side piece 14, is moved away from its facing arrangement as described further hereinbelow.

Referring to figures 3a, 3b and 3c, the cooperating inter-engaging means consist of a second projecting part 54 which is integrally formed at the lateral edge 52 of the end piece 18; this part 54 has a configuration and a dimension so as to be fittingly received in the rectangular opening 34 of the adjacent side piece 14. Projecting 54 has a larger rounded entry portion 55, the function of which will be described further hereinbelow.

With reference to figures 3a, 3b and 3c, the assembly of the side and end pieces in an erected position will now be described. As illustrated in figure 3a, the end piece 18 is adapted to be pivotally moved in the direction indicated by arrow 60 while the side piece 14 is adapted to be pivotally moved in the direction indicated by arrow 62.

Figure 3a shows the position of the side piece 14 and the end piece 18 prior to engagement. The projecting part 30 of the side piece 14 is brought in alignment with the projecting part 38 of member 36. Thereafter, referring to figure 3b, by moving the end piece 18 in the direction indicated by arrow 64, the projecting part 30 of the end piece 14 contacts the projecting part 38 of the finger actuable element 36 causing it to be flexed outwardly until the projecting part 54 contacts the lateral edge 32 of the side

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piece 14. With reference to figure 3c, the side piece 14 is then moved in the direction indicated by arrow 66 whereby the projecting part 54 is forcibly engaged in the opening 34 and the finger actuable means 36 return to its original position, facing the first projecting part 30 of the inter-engaging means. Thus, the extremity 38 of these means secure the inter-engagement of these parts as a result of its facing arrangement. The securing engagement is enhanced by the squeezing engagement of the edge 55 against the slightly sloping entry edge 57 (see figure 3a). The resiliency in the material of the finger actuable element 36 causes the movement of return from the position shown in figure 3b to the position shown in figure 3c without any manual assistance.

To disassemble this secured engagement, finger pressure is applied as indicated by arrow 68 on portion 46 of the flexible element 36 returning to the configuration shown in figure 3b. Thereafter, the side piece 14 is moved in the direction opposite to the direction of arrow 66, edge 54 forcibly sliding away from the sloping edge 57. Thereafter, the end piece 18 is pivotally moved in a direction opposite to that indicated by arrow 64 to adopt the position shown in figure 3a whereby the end and side pieces may be folded inwardly or outwardly, depending on the particular construction of the container.

The present invention has been illustrated with reference to the container construction shown in figure 1 which is a container where the side end pieces can be moved only in two positions i.e. erected position and outwardly folded position. However, the particular securing arrangement of the present invention at the upper part of each side and end pieces may also be mounted on containers having hinge connections which enable the side pieces to be folded either inwardly, or both inwardly and outwardly.

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Although the invention has been described above with respect
with one specific form, it will be evident to a person skilled in the art that it
may be modified and refined in various ways. It is therefore wished to have
it understood that the present invention should not be limited in scope,
5 except by the terms of the following claims.

CLAIMS

1. A five-piece open container for carrying items comprising: a rectangular bottom piece formed of plastics material, said bottom piece having a pair of opposite side edges and a pair of opposite end edges; a pair of side pieces formed of plastics material, each side piece having a lower edge and a pair of opposite lateral edges; and a pair of end pieces formed of plastics material, each end piece having a lower edge and a pair of lateral edges; each said side edge and each said end edge of said bottom piece displaying a series of horizontally spaced recessed areas and a horizontally extending integrally formed hinge traversing each said recessed area; each said lower edge of said side and end pieces including a series of horizontally spaced extensions; said extensions being so disposed along each said lower edge as to be received within a corresponding one of said recessed areas for pivotal assembly of said side and end pieces to said bottom piece; said extensions being configured to enable said side and end pieces to be pivotally moved between two positions including an erected position and a non-erected position; each said side and end pieces having, in the upper part thereof and adjacent a lateral edge thereof, cooperating means for inter-engaging said side and end pieces in said erected position, and finger actuatable means integral with one of said side or end pieces securing said side and end pieces in an erected inter-engagement; said finger actuatable means being flexible outwardly so as to be moved out of a securing position and to enable disengagement of said side and end pieces from one another.

2. A five-piece container as defined in claim 1, wherein said cooperating inter-engaging means consist of a first part integral with said one

of said side piece and end piece and projecting from a lateral edge thereof; said first part having a receiving aperture therein; said cooperating inter-engaging means consisting of a second part integral with the other of said side or end piece and projecting from a lateral edge thereof; said second part having a portion adapted to be engaged in said aperture in said securing position.

3. A five-piece container as defined in claim 2, wherein said finger actuatable means consists of an elongated part formed in said one of said side or end piece; said elongated part having one end facing said first projecting part to define said securing position.

4. A five-piece open container for carrying items comprising: a rectangular bottom piece formed of plastic material, said bottom piece having a pair of opposite side edges and a pair of opposite end edges; a pair of side pieces formed of plastics material, each side piece having a lower edge and a pair of opposite lateral edges; and a pair of end pieces formed of plastics material, each end piece having a lower edge and a pair of lateral edges; each said side edge and each said end edge of said bottom piece displaying a series of horizontally spaced recessed areas and a horizontally extending integrally formed hinge traversing each said recessed area; each said lower edge of said side and end pieces including a series of horizontally spaced extensions; said extensions being so disposed along each said lower edge as to be received within a corresponding one of said recessed areas for pivotal assembly of said side and end pieces to said bottom piece; said extensions being configured to enable said side and end pieces to be pivotally moved between two positions including an erected position and a non-erected position; each said side and end pieces having, in the upper part thereof and adjacent a lateral

edge thereof, cooperating means for inter-engaging said side and end pieces in said erected position, and finger actuatable means integral with one of said side or end pieces securing said side and end pieces in an erected interengagement; said finger actuatable means consisting of an elongated part formed in said one of said side or end piece; said elongated part having one end facing a projecting part of said inter-engaging means; said finger actuatable means being flexible outwardly outside the plane of said one of said side or end piece so as to be moved out of a securing position and to enable disengagement of said side and end pieces from one another.

5. A five-piece container as defined in claim 4, wherein said cooperating inter-engaging means consist of a first part integral with one side piece, said first part having a receiving aperture therein; said cooperating interengaging means consisting of a second part integral with an adjacent side piece and projecting from a lateral edge thereof; said second part having a portion adapted to be engaged in said aperture in said securing position.

6. A five-piece container as defined in claim 5, wherein said finger actuatable means consists of an elongated part formed in said one side piece and having one end facing said projecting part of said adjacent side piece to define said securing position.

7. A five-piece container as defined in any one of claims 1 to 6, wherein said finger actuatable means has a finger contacting portion which is reachable inside the container.

